

The clues of the drug repurposing

张戈

DRUG 1:Viagra(Sildenafil)

- **SIDER**

Side effects

Pain in extremity ⓘ
Erythema ⓘ
Back pain ⓘ

Intraocular pressure increased
Erectile dysfunction ⓘ
Retinal oedema

Indications

Diabetic
Erectile dysfunction ⓘ
Fasting ⓘ

Viagra& Clofazimine

- **Drugbank(target/enzymes/ transporters)**

enzymes:

Cytochrome P450 3A4

General Function:Vitamin d3 25-hydroxylase
activity

Gene Name:CYP3A4

DRUG 2:thalidomide



- **SIDER**

Side effects

Erythema multiforme 
Erythema nodosum 
Gastrointestinal haemorrhage 

Indications

Plasma cell myeloma 
Pregnancy 
Prostate cancer 

Erythema nodosum leprosum 
Graft versus host disease 

- **Drugbank**

A piperidinyl isoindole originally introduced as a non-barbiturate hypnotic, but withdrawn from the market due to teratogenic effects. It has been reintroduced and used for a number of immunological and inflammatory disorders. Thalidomide displays immunosuppressive and anti-angiogenic activity. It inhibits release of tumor necrosis factor-alpha from monocytes, and modulates other cytokine action

DRUG 3:buprenorphine

- **SIDER**

Side effects

Pain
Withdrawal syndrome

back/extremity/abdominal/neck/chest.....

Indications

Indication

- Acute pain
- Chronic pain
- Dependence on opiates
- Opioid naive
- Pain
- Postoperative pain

Dependence on opiates

- Opioid naive
- Pain

- **Drugbank**

Clinical Trials:

Conditions

Heroin Dependence / Opioid-Related Disorders / Substance-Related Disorders

Cocaine-Related Disorders / Heroin Dependence / HIV Disease

target 1: Mu-type opioid receptor(heroin)

General Function:Voltage-gated calcium channel activity

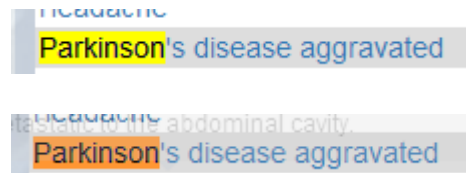
Gene Name:OPRM1

- **target 2:** Kappa-type opioid receptor
General Function: Opioid receptor activity
Gene Name: OPRK1
- **target 3:** Mu-type opioid receptor
General Function: Voltage-gated calcium channel activity
Gene Name: OPRM1
- **target 4:** Delta-type opioid receptor
General Function: Opioid receptor activity
Gene Name: OPRD1

DRUG 4:requip

- **SIDER**

Side effects



Indications



- **Drugbank(NAME:Ropinirole)**

Structured
Indications ⓘ

- Parkinson's Disease (PD)
- Restless Legs Syndrome (RLS)

Ropinirole is a nonergot dopamine agonist with high relative *in vitro* specificity and full intrinsic activity at the D₂ subfamily of dopamine receptors, binding with higher affinity to D₃ than to D₂ or D₄ receptor subtypes. The relevance of D₃ receptor binding in Parkinson's disease is unknown. The mechanism of ropinirole-induced postural hypotension is presumed to be due to a D₂ - mediated blunting of the noradrenergic response to standing and subsequent decrease in peripheral vascular resistance.

Ropinirole&LI-301

- **Target:**5-hydroxytryptamine receptor 1A
General Function:Serotonin receptor activity
Gene Name:HTR1A

DRUG 5:colesevelam

- **SIDER**

Side effects

Abnormal faeces
Diabetic
Bradycardia 

Indications

Intestinal obstruction
Low density lipoprotein increased
Type 1 diabetes mellitus

Diabetes mellitus
Diabetic ketoacidosis

• Drugbank

Colesevelam is a bile acid sequestrant. Colesevelam is used with exercise and diet changes (restriction of cholesterol and fat intake) to reduce the amount of cholesterol and certain fatty substances in the blood. It works by binding bile acids in the intestine. Bile acids are made when cholesterol is broken down in the body. Removing these bile acids helps to lower blood cholesterol.

Pharmacology:

Structured Indications ⓘ

- Heterozygous Familial Hypercholesterolemia
- Hyperlipidemias
- Type 2 Diabetes Mellitus (T2DM)

Clinical Trials:

Type 2 Diabetes Mellitus (T2DM)

Nonalcoholic Steatohepatitis

Multiple Myeloma (MM)

Chronic Liver Diseases (CLD)

Type 2 Diabetes Mellitus (T2DM)

Hypercholesterolaemia / Pre-Diabetes / Type 2 Diabetes Mellitus (T2DM)

Hyperlipidemias / Type 2 Diabetes Mellitus (T2DM)

Impaired Fasting Glucose (IFG) / Pre-Diabetes

1. Bile acids

target:

	Kind	Group
Organism		Human
Pharmacological action	yes	
Actions		binder

DRUG 6: gabapentin

- **SIDER**

Side effects

Epididymitis
Epilepsy
Eructation

Dysaesthesia
Neuropathy
Lymphadenopathy

Angina pectoris
Anxiety
Aphasia

Pain
Pancreatitis

Indications

Convulsion
Epilepsy
Neuralgia

- **Drugbank**

Gabapentin (brand name Neurontin) is a medication originally developed for the treatment of epilepsy. Presently, gabapentin is widely used to relieve pain, especially neuropathic pain.

Pharmacology:

Structured Indications ⓘ

- Diabetic Neuropathies
- Fibromyalgia Syndrome
- Hot Flashes
- Partial Onset Seizures
- Post-Herpetic Neuralgia (PHN)
- Post-Operative Pain
- Refractory Chronic Cough
- Restless Legs Syndrome (RLS)
- Social Anxiety Disorder (SAD)
- Brachioradial pruritis

Clinical Trials:

1	Completed	Not Available	Epilepsies
1, 2	Completed	Prevention	Anxiety / Pain

DRUG 7:pregabalin

- **SIDER**

Side effects

Anorexia
Anxiety
Arthralgia

Muscle twitching
Neuropathy
Insomnia

Indications

Diabetic peripheral neuropath
Epilepsy
Fibromyalgia

Generalised anxiety disorder

Diabetic peripheral neuropathy
Epilepsy

- **Drugbank**

Pregabalin is an anticonvulsant drug used for neuropathic pain, as an adjunct therapy for partial seizures, and in generalized anxiety disorder

Pharmacology

Structured
Indications ⓘ

- Diabetic Peripheral Neuropathic Pain
- Fibromyalgia
- Pain, Neuropathic
- Partial Onset Seizures
- Postherpetic Neuralgia

DRUG 8:plerixafor

- **SIDER**

Side effects

Insomnia

Tumour cell mobilisation

Indications

- **Drugbank**

- Mechanism of action:**

- Plerixafor inhibits the CXCR4 chemokine receptors on CD34+ cells and reversibly blocks binding of the ligand, stromal cell-derived factor-1-alpha (SDF-1 α). By blocking the interaction between SDF-1 α and CXCR4 with plerixafor, mobilization of progenitor cells is triggered. Filgrastim, a granulocyte-colony stimulating factor, is added to enhance CD34+ cell mobilization, thus increasing the yield of stem cells- an important determinant of graft adequacy.

- **Target:** C-X-C chemokine receptor type 4
General Function:Virus receptor activity
Gene Name:CXCR4

Uy GL, Rettig MP, Cashen AF: Plerixafor, a CXCR4 antagonist for the mobilization of hematopoietic stem cells. Expert Opin Biol Ther. 2008 Nov;8(11):1797-804. doi: 10.1517/14712598.8.11.1797 . [[PubMed:18847313](#)]

- Adjuvants, Immunologic
 - Anti-HIV Agents
 - Anti-Infective Agents
 - Anti-Retroviral Agents
 - Antineoplastic and Immunomodulating Agents
 - Antiviral Agents
 - HIV Fusion Inhibitors
 - Receptors, CXCR4, antagonists & inhibitors
-